K-20 Phase II
Site Survey

http://www.wa.gov/dis/k20

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After completing this survey return the completed form to:

_____

This package contains four sections:

1. Technical Specifications

2. Proposed Equipment Layouts

3. Survey Form

4. Site Survey Diagram Forms

ESD	School District	Total Routed Workstations Projected by Year 2000	Design Threshold for SD Data Access (Mbps)	T1s Available for Data	T1s Available for Video
101	Almira School District	70	0.192	0.5	0.5
101	Benge School District	0	0.192	0.5	0.5
101	Central Valley School District	300	1.544	1	1
101	Cheney School District	225	1.544	1	1
101	Chewelah School District	190	0.384	0.5	0.5
101	Colfax School District	100	0.384	0.5	0.5
101	Colton School District	26	0.192	0.5	0.5
101	Columbia/Evergreen SD	14	0.192	0.5	0.5
101	Colville School District	750	1.544	1	1
101	Creston School District	11	0.192	0.5	0.5
101	Curlew School District	20	0.192	0.5	0.5
101	Cusick School District	26	0.192	0.5	0.5
101	Davenport School District	74	0.192	0.5	0.5
101	Deer Park School District	260	0.768	0.5	0.5
101	East Valley S D - Spokane	640	1.544	1	1
101	Endicott School District	40	0.192	0.5	0.5
101	Evergreen School District Spokane	2	0.192	0.5	0.5
101	Freeman School District	150	0.384	0.5	0.5
101	Garfield School District	31	0.192	0.5	0.5
101	Great Northern School District	0	0.192	0.5	0.5
101	Harrington School District	31	0.192	0.5	0.5
101	Inchelium School District	47	0.192	0.5	0.5
101	Keller School District	0	0.192	0.5	0.5
101	Kettle Falls School District	230	0.768	0.5	0.5
101	Lacrosse School District	70	0.192	0.5	0.5
101	Lamont School District	0	0.192	0.5	0.5
101	Liberty School District	75	0.192	0.5	0.5
101	Lind School District	0	0.192	0.5	0.5
101	Loon Lake School District	35	0.192	0.5	0.5
101	Mary Walker School District	104	0.384	0.5	0.5
101	Mead School District	400	1.544	1	1
101	Medical Lake School District	380	0.768	0.5	0.5
101	Newport School District	20	0.192	0.5	0.5
101	Nine Mile Falls School District	165	0.384	0.5	0.5
101	Northport School District	0	0.192	0.5	0.5
101	Oakesdale School District	135	0.384	0.5	0.5
101	Odessa School District	85	0.384	0.5	0.5
101	Onion Creek School District	16	0.192	0.5	0.5
101	Orchard Prairie School District	0	0.192	0.5	0.5
101	Orient School District	10	0.192	0.5	0.5
101	Palouse School District	75	0.192	0.5	0.5
101	Pullman School District	350	0.768	0.5	0.5
101	Reardan-Edwall School District	65	0.192	0.5	0.5
101	Republic School District	130	0.384	0.5	0.5
101	Ritzville School District	69	0.192	0.5	0.5
101	Riverside School District	0	0.192	0.5	0.5
101	Rosalia School District	150	0.384	0.5	0.5
101	Selkirk School District	101	0.384	0.5	0.5
101	Spokane School District	10,000	6	4	1
101	Sprague School District	0	0.192	0.5	0.5
101	St. John School District	61	0.192	0.5	0.5
101	Steptoe School District	16	0.192	0.5	0.5

ESD	School District	Total Routed Workstations Projected by Year 2000	Design Threshold for SD Data Access (Mbps)	T1s Available for Data	T1s Available for Video
101	Summit Valley School District	15	0.192	0.5	0.5
101	Tekoa School District	23	0.192	0.5	0.5
101	Valley School District	40	0.192	0.5	0.5
101	Washtucna School District	30	0.192	0.5	0.5
101	Wellpinit School District	219	0.768	0.5	0.5
101	West Valley S D - Spokane	350	1.544	1	1
101	Wilbur School District	200	0.384	0.5	0.5
105	Bickleton School District	25	0.192	0.5	0.5
105	Cle Elum-Roslyn School District	450	0.768	0.5	0.5
105	Damman School District	0	0.192	0.5	0.5
105	East Valley S D - Yakima	439	1.544	1	1
105	Easton School District	63	0.192	0.5	0.5
105	Ellensburg School District	190	0.384	0.5	0.5
105	Goldendale School District	155	0.384	0.5	0.5
105	Grandview School District	178	0.384	0.5	0.5
105	Granger School District	159	0.384	0.5	0.5
105	Highland School District	160	0.384	0.5	0.5
105	Kittitas School District	170	0.384	0.5	0.5
105	Mabton School District	165	0.384	0.5	0.5
105	Mount Adams School District	194	0.384	0.5	0.5
105	Naches Valley School District	500	1.544	1	1
105	Royal School District	173	0.384	0.5	0.5
105	Selah School District	1,041	1.544	1	1
105	Sunnyside School District	584	1.544	1	1
105	Thorp School District	45	0.192	0.5	0.5
105	Toppenish School District	264	0.768	0.5	0.5
105	Union Gap School District	95	0.384	0.5	0.5
105	Wahluke School District	330	0.768	0.5	0.5
105	Wapato School District	318	0.768	0.5	0.5
105	West Valley S D - Yakima	374	1.544	1	1
105	Yakima School District	3,256	3	2	1
105	Zillah School District	217	0.768	0.5	0.5
112	Battle Ground School District	1,700	1.544	1	1
112	Camas School District	750	1.544	1	1
112	Castle Rock School District	145	0.384	0.5	0.5
112	Centerville School District	15	0.192	0.5	0.5
112	Evergreen S D - Vancouver	8,000	6	4	1
112	Glenwood School District	70	0.192	0.5	0.5
112	Green Mountain School District	30	0.192	0.5	0.5
112	Hockinson School District	155	0.384	0.5	0.5
112	Kalama School District	150	0.384	0.5	0.5
112	Kelso School District	880	1.544	1	1
112	Klickitat School District	100	0.384	0.5	0.5
112	La Center School District	350	0.768	0.5	0.5
112	Longview School District	2,900	3	2	1
112	Lyle School District	75	0.192	0.5	0.5
112	Mill A School District	25	0.192	0.5	0.5
112	Mount Pleasant School District	0	0.192	0.5	0.5
112	Naselle-Grays River S D	180	0.384	0.5	0.5
112	Ocean Beach School District	150	0.384	0.5	0.5
112	Ridgefield School District	395	0.768	0.5	0.5
112	Roosevelt School District	10	0.192	0.5	0.5

ESD	School District	Total Routed Workstations Projected by Year 2000	Design Threshold for SD Data Access (Mbps)	T1s Available for Data	T1s Available for Video
112	Skamania School District	40	0.192	0.5	0.5
112	Stevenson-Carson School District	125	0.384	0.5	0.5
112	Toutle Lake School District	220	0.768	0.5	0.5
112	Trout Lake School District	85	0.384	0.5	0.5
112	Vancouver School District	6,000	4.5	3	1
112	Wa School for the Blind	50	0.192	0.5	0.5
112	Wa School for the Deaf	170	0.384	0.5	0.5
112	Wahkiakum School District	44	0.192	0.5	0.5
112	Washougal School District	0	0.192	0.5	0.5
112	White Salmon School District	60	0.192	0.5	0.5
112	Wishram School District	20	0.192	0.5	0.5
112	Woodland School District	275	0.768	0.5	0.5
113	Aberdeen School District	455	1.544	1	1
113	Adna School District	81	0.384	0.5	0.5
113	Boistfort School District	76	0.384	0.5	0.5
113	Centralia School District	550	1.544	1	1
113	Chehalis School District	150	0.384	0.5	0.5
113	Cosmopolis School District	2	0.192	0.5	0.5
113	Elma School District	0	0.192	0.5	0.5
113	Evaline School District	8	0.192	0.5	0.5
113	Grapeview School District	79	0.384	0.5	0.5
113	Griffin School District	80	0.384	0.5	0.5
113	Hood Canal School District	40	0.192	0.5	0.5
113	Hoquiam School District	20	0.192	0.5	0.5
113	Mary M Knight School District	18	0.192	0.5	0.5
113	McCleary School District	45	0.192	0.5	0.5
113	Montesano School District	300	0.768	0.5	0.5
113	Morton School District	101	0.384	0.5	0.5
113	Mossyrock School District	170	0.384	0.5	0.5
113	Napavine School District	83	0.384	0.5	0.5
113	North Beach School District	3	0.192	0.5	0.5
113	North River School District	20	0.192	0.5	0.5
113	North Thurston School District	4,200	4.5	3	1
113	Oakville School District	100	0.384	0.5	0.5
113	Ocosta School District	50	0.192	0.5	0.5
113	Olympia School District	2,200	3	2	1
113	Onalaska School District	425	1.544	1	1
113	OSPI	270	0.768	0.5	0.5
113	Pe Ell School District	200	0.384	0.5	0.5
113	Pioneer School District	150	0.384	0.5	0.5
113	Quinault School District	0	0.192	0.5	0.5
113	Rainier School District	233	0.768	0.5	0.5
113	Raymond School District	0	0.192	0.5	0.5
113	Rochester School District	186	0.384	0.5	0.5
113	Satsop School District	0	0.192	0.5	0.5
113	Shelton School District	884	1.544	1	1
113	South Bend School District	278	0.768	0.5	0.5
113	Southside School District	0	0.192	0.5	0.5
113	Taholah School District	0	0.192	0.5	0.5
113	Tenino School District	150	0.384	0.5	0.5
113	Toledo School District	250	0.768	0.5	0.5
113	Tumwater School District	2,250	3	2	1

K-20 Educational Telecommunications
Network

Internet/Intranet Bandwidth Allocation
for K-12
Phase 2 Design

Working Copy
Draft
January 22, 1998
Revision 6.0

ESD	School District	Total Routed Workstations Projected by Year 2000	Design Threshold for SD Data Access (Mbps)	T1s Available for Data	T1s Available for Video
113	Vader School District	13	0.192	0.5	0.5
113	White Pass School District	200	0.384	0.5	0.5
113	Willapa Valley School District	0	0.192	0.5	0.5
113	Winlock School District	130	0.384	0.5	0.5
113	Wishkah Valley School District	51	0.192	0.5	0.5
113	Yelm Community Schools	950	1.544	1	1
114	Bremerton School District	660	1.544	1	1
114	Brinnon School District	41	0.192	0.5	0.5
114	Cape Flattery School District	150	0.384	0.5	0.5
114	Central Kitsap School District	4,900	4.5	3	1
114	Chimacum School District	230	0.768	0.5	0.5
114	Crescent School District	120	0.384	0.5	0.5
114	North Kitsap School District	516	1.544	1	1
114	North Mason School District	300	0.768	0.5	0.5
114	Port Angeles School District	1,200	1.544	1	1
114	Port Townsend School District	500	1.544	1	1
114	Queets-Clearwater School District	46	0.192	0.5	0.5
114	Quilcene School District	60	0.192	0.5	0.5
114	Quillayute Valley School District	1,500	1.544	1	1
114	Sequim School District	500	1.544	1	1
114	South Kitsap School District	700	1.544	1	1
121	Auburn School District	2,300	3	2	1
121	Bainbridge Island School District	690	1.544	1	1
121	Bellevue School District	5,000	4.5	3	1
121	Bethel School District	2,900	3	2	1
121	Carbonado School District	30	0.192	0.5	0.5
121	Clover Park School District	2,085	3	2	1
121	Dieringer School District	160	0.384	0.5	0.5
121	Eatonville School District	200	0.384	0.5	0.5
121	Enumclaw School District	840	1.544	1	1
121	Federal Way School District	7,500	6	4	1
121	Fife School District	550	1.544	1	1
121	Franklin Pierce School District	1,600	1.544	1	1
121	Highline School District	1,600	1.544	1	1
121	Issaquah School District	3,100	3	2	1
121	Kent School District	9,000	6	4	1
121	Lake Washington School District	8,000	6	4	1
121	Mercer Island School District	1,200	1.544	1	1
121	Northshore School District	8,000	6	4	1
121	Orting School District	300	0.768	0.5	0.5
121	Peninsula School District	1,400	1.544	1	1
121	Puyallup School District	3,300	3	2	1
121	Renton School District	5,500	4.5	3	1
121	Riverview School District	600	1.544	1	1
121	Seattle School District	4,550	4.5	3	1
121	Shoreline School District	2,700	3	2	1
121	Skykomish School District	40	0.192	0.5	0.5
121	Snoqualmie Valley School District	1,300	1.544	1	1
121	Steilacoom Historical School District	100	0.384	0.5	0.5
121	Sumner School District	1,000	1.544	2	1
121	Tacoma School District	5,000	6	4	1
121	Tahoma School District	1,350	1.544	1	1

ESD	School District	Total Routed Workstations Projected by Year 2000	Design Threshold for SD Data Access (Mbps)	T1s Available for Data	T1s Available for Video
121	Tukwila School District	600	1.544	1	1
121	University Place School District	1,250	1.544	1	1
121	Vashon Island School District	119	0.384	0.5	0.5
121	White River School District	260	0.768	0.5	0.5
123	Asotin-Anatone School District	80	0.384	0.5	0.5
123	Clarkston School District	700	1.544	1	1
123	College Place School District	190	0.384	0.5	0.5
123	Columbia School District	350	0.768	0.5	0.5
123	Dayton School District	64	0.192	0.5	0.5
123	Dixie School District	20	0.192	0.5	0.5
123	Finley School District	133	0.384	0.5	0.5
123	Kahlotus School District	16	0.192	0.5	0.5
123	Kennewick School District	950	1.544	1	1
123	Kiona Benton City School District	180	0.384	0.5	0.5
123	North Franklin School District	28	0.192	0.5	0.5
123	Othello School District	200	0.384	0.5	0.5
123	Pasco School District	800	3	2	1
123	Paterson School District	4	0.192	0.5	0.5
123	Pomeroy School District	150	0.384	0.5	0.5
123	Prescott School District	32	0.192	0.5	0.5
123	Prosser School District	205	0.768	0.5	0.5
123	Richland School District	800	1.544	1	1
123	Star School District	3	0.192	0.5	0.5
123	Starbuck School District	6	0.192	0.5	0.5
123	Touchet School District	51	0.192	0.5	0.5
123	Waitsburg School District	87	0.384	0.5	0.5
123	Walla Walla School District	955	1.544	1	1
171	Brewster School District	282	0.768	0.5	0.5
171	Bridgeport School District	161	0.384	0.5	0.5
171	Cascade School District	340	0.768	0.5	0.5
171	Cashmere School District	195	0.384	0.5	0.5
171	Coulee-Hartline School District	80	0.384	0.5	0.5
171	Eastmont School District	1,400	1.544	1	1
171	Entiat School District	102	0.384	0.5	0.5
171	Ephrata School District	120	0.384	0.5	0.5
171	Grand Coulee Dam School District	205	0.768	0.5	0.5
171	Lake Chelan School District	295	0.768	0.5	0.5
171	Mansfield School District	36	0.192	0.5	0.5
171	Manson School District	190	0.384	0.5	0.5
171	Methow Valley School District	200	0.384	0.5	0.5
171	Moses Lake School District	3,184	3	2	1
171	Nespelem School District	36	0.192	0.5	0.5
171	Okanogan School District	29	0.192	0.5	0.5
171	Omak School District	110	0.384	0.5	0.5
171	Orondo School District	108	0.384	0.5	0.5
171	Oroville School District	275	0.768	0.5	0.5
171	Palisades School District	2	0.192	0.5	0.5
171	Pateros School District	37	0.192	0.5	0.5
171	Quincy School District	380	0.768	0.5	0.5
171	Soap Lake School District	13	0.192	0.5	0.5
171	Stehekin School District	0	0.192	0.5	0.5
171	Tonasket School District	800	1.544	1	1

ESD	School District	Total Routed Workstations Projected by Year 2000	Design Threshold for SD Data Access (Mbps)	T1s Available for Data	T1s Available for Video
171	Warden School District	86	0.384	0.5	0.5
171	Waterville School District	89	0.384	0.5	0.5
171	Wenatchee School District	2,000	3	2	1
171	Wilson Creek School District	28	0.192	0.5	0.5
189	Anacortes School District	1,769	1.544	1	1
189	Arlington School District	792	1.544	1	1
189	Bellingham School District	6,679	4.5	3	1
189	Blaine School District	558	1.544	1	1
189	Burlington-Edison School Dist	2,032	3	2	1
189	Concrete School District	0	0.192	0.5	0.5
189	Conway School District	106	0.384	0.5	0.5
189	Coupeville School District	450	0.768	0.5	0.5
189	Darrington School District	230	0.768	0.5	0.5
189	Edmonds School District	10,160	6	4	1
189	Everett School District	7,000	4.5	3	1
189	Ferndale School District	1,625	1.544	1	1
189	Granite Falls School District	779	1.544	1	1
189	Index School District	18	0.192	0.5	0.5
189	La Conner School District	354	0.768	0.5	0.5
189	Lake Stevens School District	1,118	1.544	1	1
189	Lakewood School District	400	0.768	0.5	0.5
189	Lopez Island School District	180	0.384	0.5	0.5
189	Lynden School District	835	1.544	1	1
189	Marysville School District	4,228	4.5	3	1
189	Meridian School District	650	1.544	1	1
189	Monroe School District	1,862	1.544	1	1
189	Mount Baker School District	823	1.544	1	1
189	Mount Vernon School District	1,040	1.544	1	1
189	Mukilteo School District	7,723	4.5	3	1
189	Nooksack Valley School District	305	0.768	0.5	0.5
189	Oak Harbor School District	500	1.544	1	1
189	Orcas Island School District	275	0.768	0.5	0.5
189	San Juan Island School District	272	0.768	0.5	0.5
189	Sedro-Woolley School District	2,426	1.544	1	1
189	Shaw Island School District	0	0.192	0.5	0.5
189	Snohomish School District	3,655	3	2	1
189	South Whidbey School District	1,169	1.544	1	1
189	Stanwood School District	0	0.192	0.5	0.5
189	Sultan School District	0	0.192	0.5	0.5

K-20 Network
Phase 2 Site Preparations
Cost Responsibilities

January 14, 1998

1.   Property Line to Telco Entrance Facility

If new cable is required – cost for infrastructure (pathway) is paid by District

Circuit, i.e. service, installation – cost is paid by K-20

2.   Extended demarc

If pathway is required – cost is paid by District

Wiring installation – cost is paid by K-20

Maintenance of extended demarc wiring is responsibility of telco

3.   Extended wiring

If pathway is required – cost is paid by District

Wiring installation – cost is paid by District

Maintenance of extended wiring is responsibility of District

4.   Telco Entrance Facility, Router Room and Video Room

If room(s) construction is required – cost is paid by District

If changes are required for electrical – cost is paid by District

If environmental changes are required – cost is paid by District
     Temperature and ventilation
     Security

If additional rack space must be purchased – cost is paid by District

5.   Uninterrupted Power Supply (UPS) for site electronics

Service level is determined by District

Purchase of UPS system(s) – cost is paid by District

Technical Specifications

Technical Specifications

When existing infrastructure and cable plant are to be used they will need to meet the following specifications:

Cable Plant Requirements:
1. Distance Limitations
   - Telco entrance facility to the extended demarc is Telco owned and will be determined by the Telco.
   - K-20 interface to the K-20 router is K-20 owned and will be limited by the cable provided with the equipment.
   - K-20 interface to the video IMUX is district owned and will be distance limited based on the attenuation of the cable used.
2. Cable Type
   - Telco entrance facility to the extended demarc is Telco owned and will be determined by the Telco.
   - K-20 interface to the K-20 router is K-20 owned and will be determined by the equipment manufacturer.
   - K-20 interface to the video switch is district owned and will be selected by the district so long as the cable run is within the allowable attenuation DS1 service as specified by the manufacturer of the CSU/DSU. The recommended cable is a shielded twisted pair with separate sheaths used for each direction of transmission.
3. Cable Attenuation
   - The attenuation limit from the DSU/CSU as set by the manufacturer is _____.
4. Cable Pair Assignment
   - The two directions of transmission of the DS1 circuit should be routed in separate cable sheaths to provide for the best transmission there by allowing for the maximum distance between the DSU/CSU and the video switch.
5. Environmental Requirements
   - Temperature must be maintained between – 4 deg F and 104 deg F in the equipment rooms to meet the requirements of the equipment manufacturers.
   - Relative humidity must be maintained between 10% and 90% non-condensing in the equipment rooms to meet the requirements of the equipment manufacturers.
6. Security
   - The K-20 recommendation is that equipment rooms be secured with controlled access to protect equipment, personnel, and to provide high quality of service.
7. Other equipment and services in equipment rooms.
   - It is strongly recommended if at all possible to keep video and data equipment rooms free and clear of electrical panels, other electrical equipment, water lines, general storage, etc. In other rooms video and data equipment rooms should be used for nothing other than voice and data equipment.
8. Electrical Requirements
   - The K-20 requirement is that one dedicated 110 V 20 A circuit be provided feeding two quad outlets for the K-20 equipment. It is recommended that two 110 V 20 A circuits be provided to allow sufficient outlets for test equipment should the occasion arise where testing will be necessary. Each circuit should terminate in a quad outlet within two feet of the equipment location.
   - The electrical circuits provided for the K-20 equipment as well as any circuit provided for voice and data equipment should come from a clean power source and if necessary should be treated with a filter if the district feels it necessary. In addition if the district feels it necessary a UPS should be provided for the K-20 equipment.
9. Grounding
   - The minimum requirement will be a #6 AWG stranded wire connected to the building service ground and terminated adjacent to the router equipment location. It is preferred this ground be terminated on a ¼″ x 2″ x 6″ copper buss bar installed on standoff insulators adjacent to the router location.

When infrastructure and cable plant need to be constructed the following specifications should be followed to insure a quality installation based on current industry standards.

Patch Cords

- All Category 5 cordage shall be round, 24 AWG, tinned copper, stranded conductors insulated with high-density polyethylene, tightly twisted into individual pairs and jacketed with flame retardant PVC. Both ends of the cord shall

be equipped with modular 8-position plugs.

Information Outlets

- All outlets shall be 8-pin modular CAT5 wired in EIA/TIA 568A or B configuration.

Horizontal Cabling

- The horizontal cables connected to each information outlet shall be 4-pair, 150Ω shielded twisted pair (STP).

- All Category 5 cables shall conform to EIA/TIA 568A Commercial Building Telecommunications Cabling Standard, Horizontal Cable Section. Applications standards supported should include, but be not limited to, IEEE 802.3, 1Base5, 10BASE-T; IEEE 802.5, 4 Mbps, 16Mbps (328 ft [100m], 104 Workstations) and TP-PMD. In addition, these cables shall be capable of supporting evolving high-end applications such as 100 Base-T and 52/155 Mbps ATM.

- The length of each individual run of horizontal copper cable from the Telecommunications Closet on each floor to the information outlet device shall not exceed 295 ft (90 m).

- The Contractor shall observe the bending radius and pulling strength requirements of the 4-pair UTP/fiber optic cable during handling and installation.

- Each run of cable between the termination block and the information outlet shall be continuous without any joints or splices.

- The 4 pair STP cable shall be UL and c (UL) Listed Type MPR, MPP, CMR, or CMP.

- Continuous conduit runs installed by the contractor should not exceed 100 feet or contain more than two (2) 90 degree bends without utilizing appropriately sized pull boxes.

Equipment Room Subsystem

- The Equipment Subsystem consists of shared (common) electronic communications equipment in the equipment room or telecommunications closet and the transmission media required to terminate this equipment on distribution hardware.

- Communication bonding and grounding shall be in accordance with the NEC and NFPA. Horizontal cables shall be grounded in compliance with ANSI/NFPA 70 and local requirements and practices. Horizontal equipment includes cross connect frames, patch panels and racks, active telecommunication equipment and test apparatus and equipment. When required by local code, provide a Telecommunications Bonding Backbone utilizing a #6 AWG or larger bonding conductor that provides direct bonding between equipment rooms and   telecommunications closets. This is part of the grounding and bonding infrastructure part of the telecommunications pathways and spaces in the building structure), and is independent of equipment or cable.

Campus Subsystem

- When a distribution system encompasses more than one building, the components that provide the link between buildings constitute the Campus Backbone Subsystem. This subsystem includes the backbone transmission media, associated connecting hardware terminating this media, and electrical protection devices to mitigate harmful voltages when the media is exposed to lightning and/or high voltage power surges that pass through the building cable. It is normally a first-level backbone cable beginning at the main cross connect in the equipment room of the hub building and extending to the intermediate cross connect in the equipment room of a satellite building.

- The cable distribution system shall be aerial, buried or underground or any combination thereof.

Structures

- Conduit will consist of rigid steel, EMT, or Schedule 40 PVC dependent on the local code.

- Conduit runs will be made in as straight a route as possible with no section being over 100 feet in length or having more than 180 degrees of bend. If the section will exceed either of these requirements, a pull device meeting the minimum requirements shown in the following table will be required.

	Pull Box Dimensions (in inches)			
Conduit Trade Size (in inches)	Width	Length	Depth	Width Increase for Each Additional Conduit
1	12	32	4	3
1.25	14	36	5	4
1.5	18	39	6	4
2	20	42	7	5
2.5	24	48	8	6
3	30	54	9	6
3.5	36	60	10	7
4	42	66	11	7

- The minimum bend radius for conduit with a diameter less than 2 in. is 10 times the internal conduit diameter.
- The minimum bend radius for conduit with a diameter of 2 in. or greater is 10 times the internal conduit diameter.
- All conduit runs will have a pull rope installed. The preferred pull rope is "MuleTape".
- All conduit ends will be reamed, bushed, and capped until cable is pulled.
- All wall, floor, and ceiling penetrations will be firestopped.
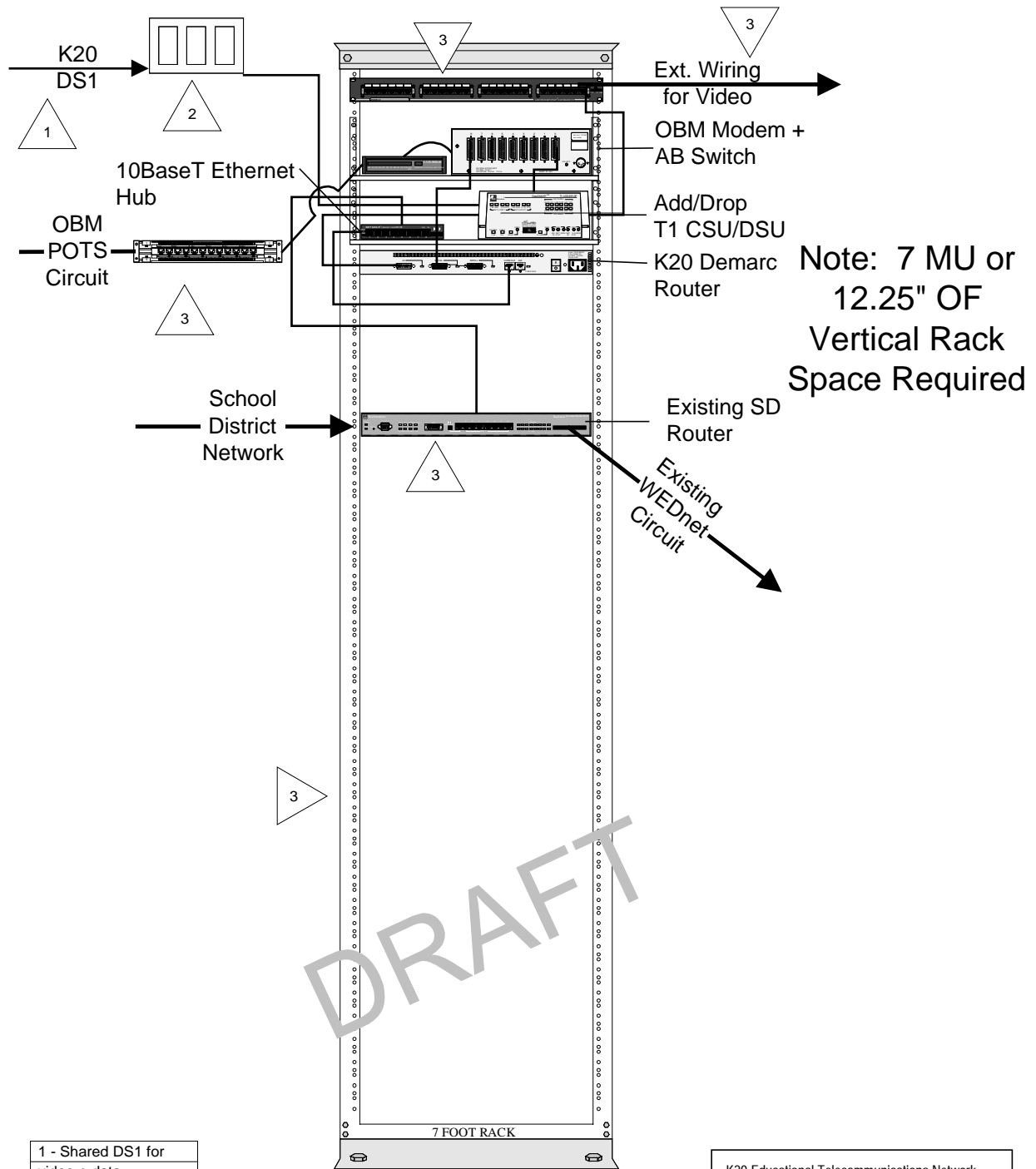- All conduits will be firestopped with a re-enterable firestop material.

Testing

Testing of wiring shall be performed prior to system cutover. 100 percent of the STP horizontal and riser wiring pairs shall be tested for opens, shorts, polarity reversals, transposition and presence of AC voltage. STP horizontal wiring pairs shall be tested to EIA/TIA 568A from the information outlet to the TC and from the TC to the information outlet.
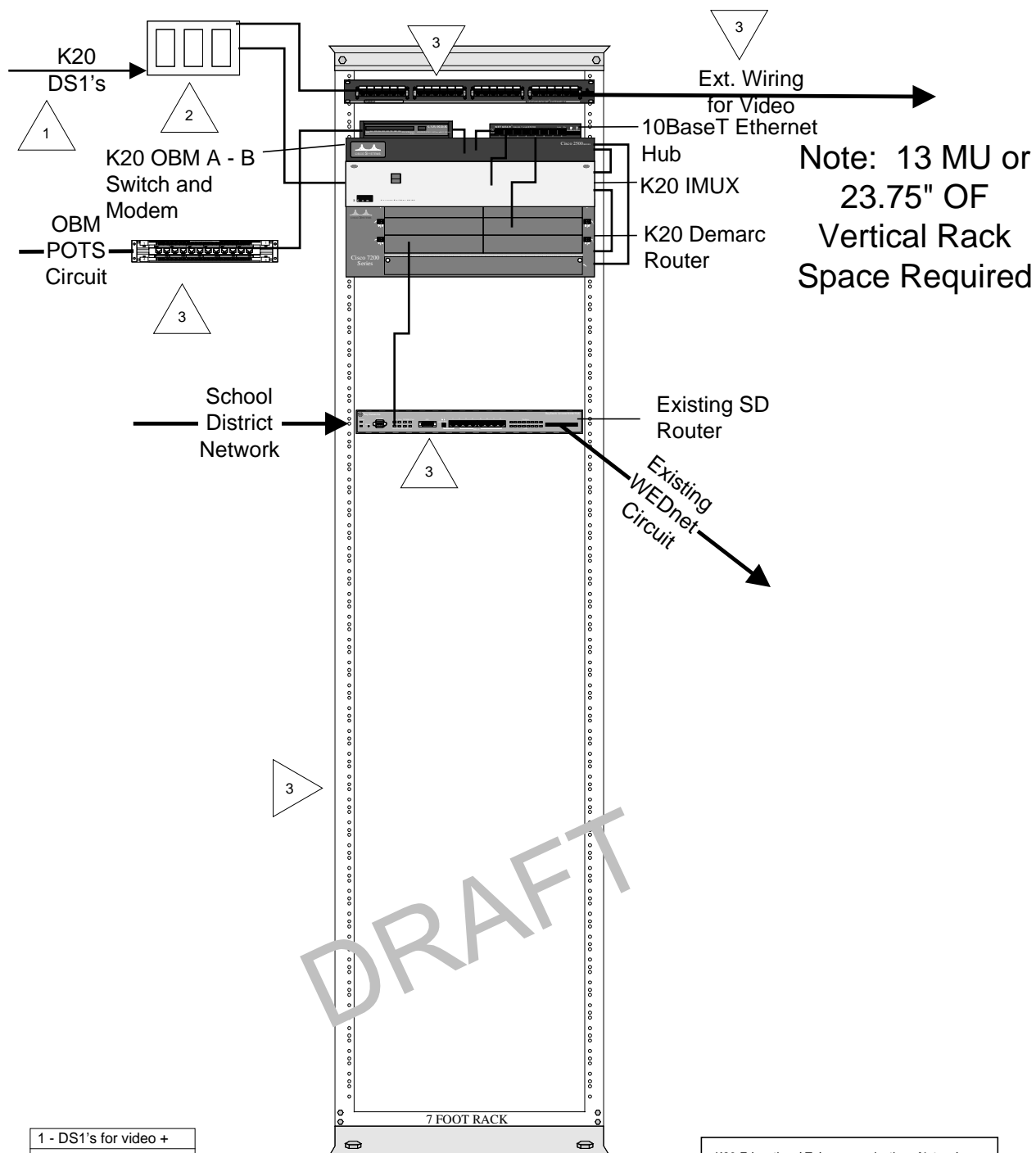
Inspection

On-going inspections shall be performed during construction by the Project Manager. All work shall be performed with high quality craftsmanship and the overall appearance shall be clean, neat and orderly. The following points will be examined:

- Is the design documentation complete? Are all cables properly labeled, from end-to-end?
- Have all terminated cables been tested for continuity and shorts?
- Is the cable type suitable for its pathway? Are the cables bundled in parallel?
- Have the pathway manufacturer's guidelines been followed? Are all cable bores, floor and wall penetrations installed properly and fired stopped according to code?
- Have the Contractors avoided excessive cable bending?
- Have potential EMI sources been considered?
- Is Cable Fill Correct?
- Are hanging supports within 1.5 meters (5 feet)?
- Does hanging cable exhibit some sag?
- Are telecommunications closet termination's compatible with applications equipment?
- Have Patch Panel instructions been followed?

Proposed Equipment Layouts

K20
DS1

1

2

3

10BaseT Ethernet
Hub

OBM
POTS
Circuit

3

School
District
Network

3

3

Ext. Wiring
for Video

3

OBM Modem +
AB Switch

Add/Drop
T1 CSU/DSU

K20 Demarc
Router

Note: 7 MU or
12.25" OF
Vertical Rack
Space Required

Existing SD
Router

Existing
WEDnet
Circuit

DRAFT

7 FOOT RACK

1 - Shared DS1 for
video + data
2 - Extended demarc
from telco entrance
facility.
3 - Supplied by district.

K20
DS1's

1

K20 OBM A - B
Switch and
Modem

2

OBM
POTS
Circuit

3

3

Ext. Wiring
for Video

3

10BaseT Ethernet
Hub

K20 IMUX

K20 Demarc
Router

Note: 13 MU or
23.75" OF
Vertical Rack
Space Required

Cisco 2500xx

Cisco 7200
Series

School
District
Network

3

Existing SD
Router

Existing
WEDnet
Circuit

3

DRAFT

7 FOOT RACK

| 1 - DS1's for video + |
| data |
| 2 - Extended demarc |
| from telco entrance |
| facility. |
| 3 - Supplied by district. |
| |
| |

K20 Educational Telecommunications Network

Phase 2 Design - ***DRAFT***

Drawing title: *Large District Data Equipment*

File name: Section 7 Site Survey Equipment
layouts

Created by: mstoops	Date:	12-23-97
Revised by: Mark D. Stoops	Date:	1/12/98
Approved by:	Date:	xx-xx-xx

K-20 Phase II Site Survey

Desktop
Video
Equipment
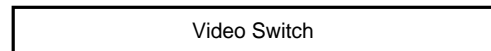
Video Switch

1 MU

At 1.75" per MU and allowing 2 MU for equipment spacing the overall space requirement is 3 MU or 5.25"
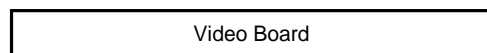
Video Board

Two boards to be installed in the Desktop Video PC (District supplied)

K-20 Phase II Site Survey

Group
Video
Equipment

Video Switch

1 MU
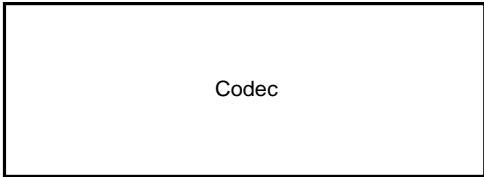
Codec

Size Unknown

Overall size unknown

Survey Form

K20 PHASE 2 SITE SURVEY INFRASTRUCTURE
Site Survey Form
*****   DRAFT   *****

Data DS1's _____

Video DS1's _____

1. SITE INFORMATION

Sector (circle one):   K12   CC   BACC

Site Name: _____

Site Address: _____

Site Address: _____

City: _____   Zip Code: _____

Site Main Phone No. _____

2. SITE CONTACTS

Access Contact:
- Name: _____
- Title: _____
- Phone No. _____
- Fax No. _____
- Pager No. _____
- email _____

Install Contact:
- Name: _____
- Title: _____
- Phone No. _____
- Fax No. _____
- Pager No. _____
- email _____

Building Maintenance Contact:
- Name: _____
- Title: _____
- Phone No. _____
- Fax No. _____
- Pager No. _____
- email _____

Local Telephone Company Contact:
- Telephone Company Name: _____
- Name: _____
- Title: _____
- Phone No. _____
- Fax No. _____
- Pager No. _____
- email _____

Approvals

ESD _____   Date: _____

Site Survey Team _____   Date: _____

DIS _____   Date: _____

3. ROOM LOCATION INFORMATION

Telco Entrance Facility
Building: _____
Floor: _____
Room No. _____

Main Telephone Room
Building: _____
Floor: _____
Room No. _____

Router Location
Building: _____
Floor: _____
Room No. _____

Video Location
Building: _____
Floor: _____
Room No. _____

Comments: _____
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4. PATHWAY INFORMATION

A. Property Line to Telco Entrance Facility

Is there any existing infrastructure (conduits, cable trays, cable, etc) between the property line and Telco Entrance
Facility room?   Yes   No
Describe in detail the existing pathway (complete **Cable Pathway Diagram 1**)

_____

_____

_____

_____

If there is existing cable plant available between the locations then describe the cable type (gauge, count, model #). Also,
describe what type of termination is used at both ends of the cable, and any cross-connect points. If the cable
is district owned include the test results.

_____

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_____

What is the total cable distance from the property line to the entrance facility (include on
 Cable Pathway Diagram 1)?

_____

If, no pathway exists, then indicate when the pathway will be provided and who will be installing it.

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Comments: _____

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B. Telco Entrance Facility to Router Location

Is there any existing infrastructure (conduits, cable trays, cable etc) between the Telco Entrance Facility and the
Router Room?   Yes   No

Describe in detail the existing pathway (complete **Cable Pathway Diagram 2**)

_____

_____

_____

_____

If there is existing cable plant available between the rooms, then describe the cable type (gauge, count, model #). Also,
describe what type of termination is used at both ends of the cable, and any cross-connect points. If the cable
is district owned include the test results.   _____

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What is the total cable distance between the rooms (include on **Cable Pathway Diagram 2**)?   _____

If, no pathway exists, then indicate when the pathway will be provided and who will be installing it.

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Comments: _____

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C. Telco Entrance Facility to Video Room

Is there any existing infrastructure (conduits, cable trays, cable etc) between the Telco Entrance Facility and the
Video Room?   Yes   No
Describe in detail the existing pathway (complete **Cable Pathway Diagram 3**)_____

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If there is existing cable plant available between the rooms, then describe the cable type (gauge, count, model #). Also,
describe what type of termination is used at both ends of the cable, and any cross-connect points. If the cable
is district owned include the test results. _____

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What is the total cable distance between the rooms (include on **Cable Pathway Diagram 3**)?   _____

If, no pathway exists, then indicate when the pathway will be provided and who will be installing it.

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Comments: _____

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D. Router Location to Video Room

Is there any existing pathway infrastructure (conduits, cable trays, cable etc) between the Router Room and the
Video Room?   Yes   No
Describe in detail the existing pathway (complete **Cable Pathway Diagram 4**)

If there is existing cable plant available between the rooms, then describe the cable type (gauge, count, model #). Also,
describe what type of termination is used at both ends of the cable, and any cross-connect points. If the cable
is district owned include the test results.

What is the total cable distance between the rooms (include on **Cable Pathway Diagram 4**)?

If, no pathway exists, then indicate when the pathway will be provided and who will be installing it.

Comments:

5. ROOM LAYOUT INFORMATION

A. Telco Entrance Facility Room Layout

What are the room dimensions? _____   Does the room have secured entry?   Yes   No

Does the room have proper environmentals?   Yes   No   Does the room have UPS/Filtering?   Yes   No

Will equipment be installed in this room?   Yes   No

If yes will the equipment be mounted in an **existing** wall mount rack or stand-alone data cabinet?   Yes   No

If no when will the rack space be provided and who will be providing it? _____

_____

How many available electrical outlets exist in the room? _____

How many are "Isolated and Dedicated" outlets? _____

Is there a ground bar installed in the room?   Yes   No

Is the ground bar connected to the building service ground?   Yes   No

If there is a connection to the building service ground what type and gauge of wire is used for this connection?

_____

Are the existing cabinets/racks grounded?   Yes   No

If so what type and guage of wire is used for this connection? _____

Does the room have an existing circuit demarcation backboard? _____ If so, the size? _____

How much space is available on the back board? _____

What type of demarcation blocks, if any, are currently in use? _____

Is the room serviced by (circle one)?   Raised Floor   Ceiling Cable Trays   Neither

Complete **Room Layout Diagram 1,** including dimensions, cabinet and/or rack placement, backboard location.

Complete **Equipment Cabinet Diagram 1** specifying loation of equipment , circuit interface, and other equipment housed in the same cabinet/rack.

Attach photos showing the rack location in the room and the space in the rack.

Comments: _____

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B. Main Telephone Room Layout

What are the room dimensions? _____   Does the room have secured entry?   Yes   No

Does the room have proper environmentals?   Yes   No   Does the room have UPS/Filtering?   Yes   No

Will equipment be installed in this room?   Yes   No

If yes will the equipment be mounted in an **existing** wall mount rack or stand-alone data cabinet?   Yes   No

If no when will the rack space be provided and who will be providing it? _____

_____

How many available electrical outlets exist in the room? _____

How many are "Isolated and Dedicated" outlets? _____

Is there a ground bar installed in the room?   Yes   No

Is the ground bar connected to the building service ground?   Yes   No

If there is a connection to the building service ground what type and gauge of wire is used for this connection?

_____

Are the existing cabinets/racks grounded?   Yes   No

If so what type and guage of wire is used for this connection? _____

Does the room have an existing circuit demarcation backboard? _____ If so, the size? _____

How much space is available on the back board? _____

What type of demarcation blocks, if any, are currently in use? _____

Is the room serviced by (circle one)?   Raised Floor   Ceiling Cable Trays   Neither

Complete **Room Layout Diagram 2,** including dimensions, cabinet and/or rack placement, backboard location.

Complete **Equipment Cabinet Diagram 2** specifying loation of equipment , circuit interface, and other equipment

housed in the same cabinet/rack.

Attach photos showing the rack location in the room and the space in the rack.

Comments: _____

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C. Router Room Layout

What are the room dimensions? _____   Does the room have secured entry?   Yes   No

Does the room have proper environmentals?   Yes   No   Does the room have UPS/Filtering?   Yes   No

Will equipment be installed in this room?   Yes   No

If yes will the equipment be mounted in an **existing** wall mount rack or stand-alone data cabinet?   Yes   No

If no when will the rack space be provided and who will be providing it? _____

_____

How many available electrical outlets exist in the room? _____

How many are "Isolated and Dedicated" outlets? _____

Is there a ground bar installed in the room?   Yes   No

Is the ground bar connected to the building service ground?   Yes   No

If there is a connection to the building service ground what type and gauge of wire is used for this connection?

_____

Are the existing cabinets/racks grounded?   Yes   No

If so what type and guage of wire is used for this connection? _____

Does the room have an existing circuit demarcation backboard? _____   If so, the size? _____

How much space is available on the back board? _____

What type of demarcation blocks, if any, are currently in use? _____

Is the room serviced by (circle one)?   Raised Floor   Ceiling Cable Trays   Neither

Complete **Room Layout Diagram 3,** including dimensions, cabinet and/or rack placement, backboard location.

Complete **Equipment Cabinet Diagram 3** specifying loation of equipment , circuit interface, and other equipment housed in the same cabinet/rack.

Attach photos showing the rack location in the room and the space in the rack.

Comments: _____

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D. Video Room Layout

What are the room dimensions? _____ Does the room have secured entry?   Yes   No

Does the room have proper environmentals?   Yes   No   Does the room have UPS/Filtering?   Yes   No

Will equipment be installed in this room?   Yes   No

If yes will the equipment be mounted in an **existing** wall mount rack or stand-alone data cabinet?   Yes   No

If no when will the rack space be provided and who will be providing it? _____

_____

_____

How many available electrical outlets exist in the room? _____

How many are "Isolated and Dedicated" outlets? _____

Is there a ground bar installed in the room?   Yes   No

Is the ground bar connected to the building service ground?   Yes   No

If there is a connection to the building service ground what type and gauge of wire is used for this connection?

_____

Are the existing cabinets/racks grounded?   Yes   No

If so what type and guage of wire is used for this connection? _____

Does the room have an existing circuit demarcation backboard? _____ If so, the size? _____

How much space is available on the back board? _____

What type of demarcation blocks, if any, are currently in use? _____

Is the room serviced by (circle one)?   Raised Floor   Ceiling Cable Trays   Neither

Complete **Room Layout Diagram 4,** including dimensions, cabinet and/or rack placement, backboard location.

Complete **Equipment Cabinet Diagram 4** specifying loation of equipment , circuit interface, and other equipment

housed in the same cabinet/rack.

Attach photos showing the rack location in the room and the space in the rack.

Comments: _____

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Site Survey Diagrams

CABLE PATHWAY DIAGRAM 1
Property Line to Telco Entrance Facility

□ = ___ ft

CABLE PATHWAY DIAGRAM 2
Telco Entrance Facility to Router Location

= ___ ft
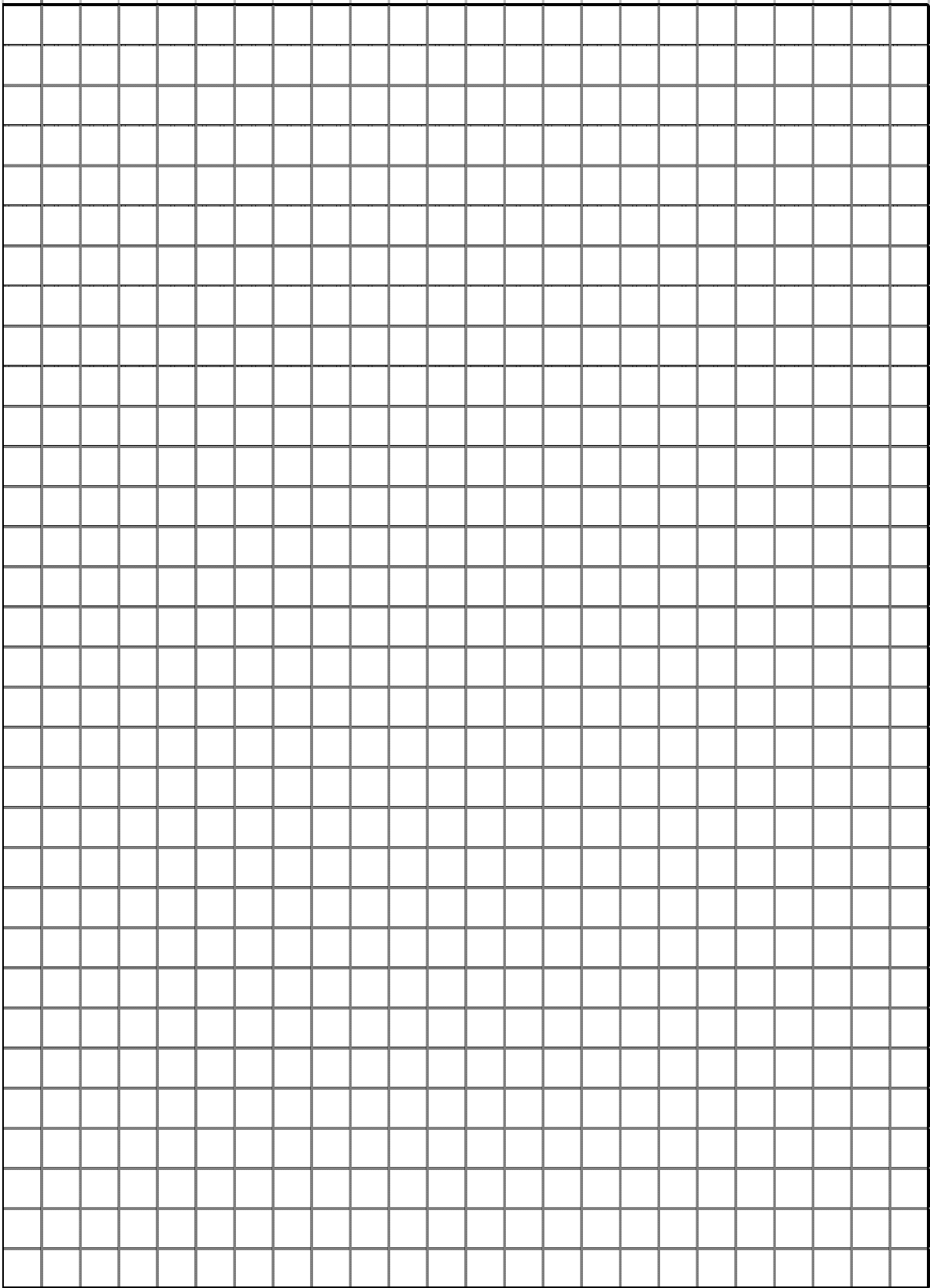
CABLE PATHWAY DIAGRAM 2

CABLE PATHWAY DIAGRAM 3
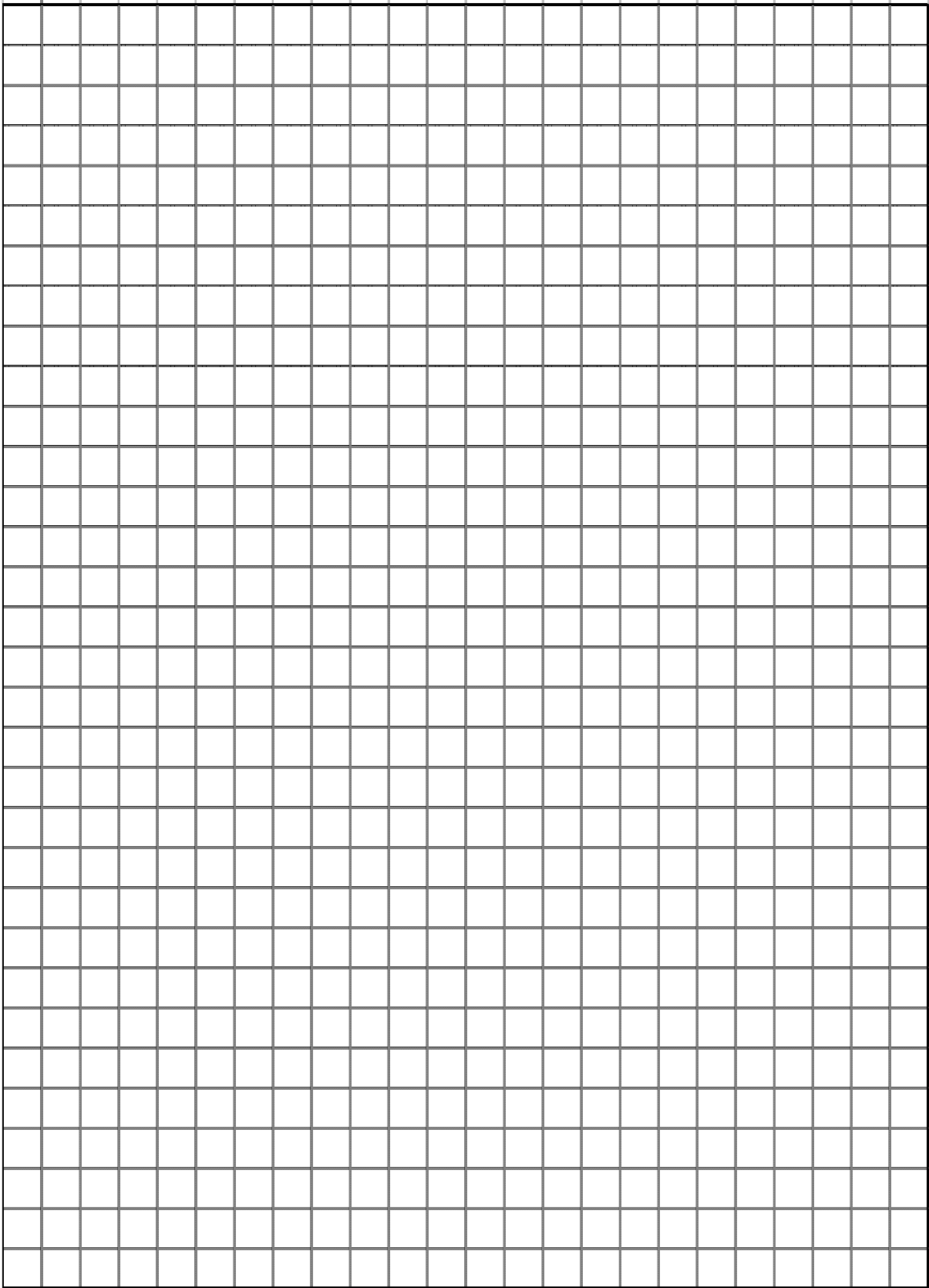## Telco Entrance Facility to Video Room

= ___ ft

CABLE PATHWAY DIAGRAM 4
Router Location to Video Room

= ___ ft
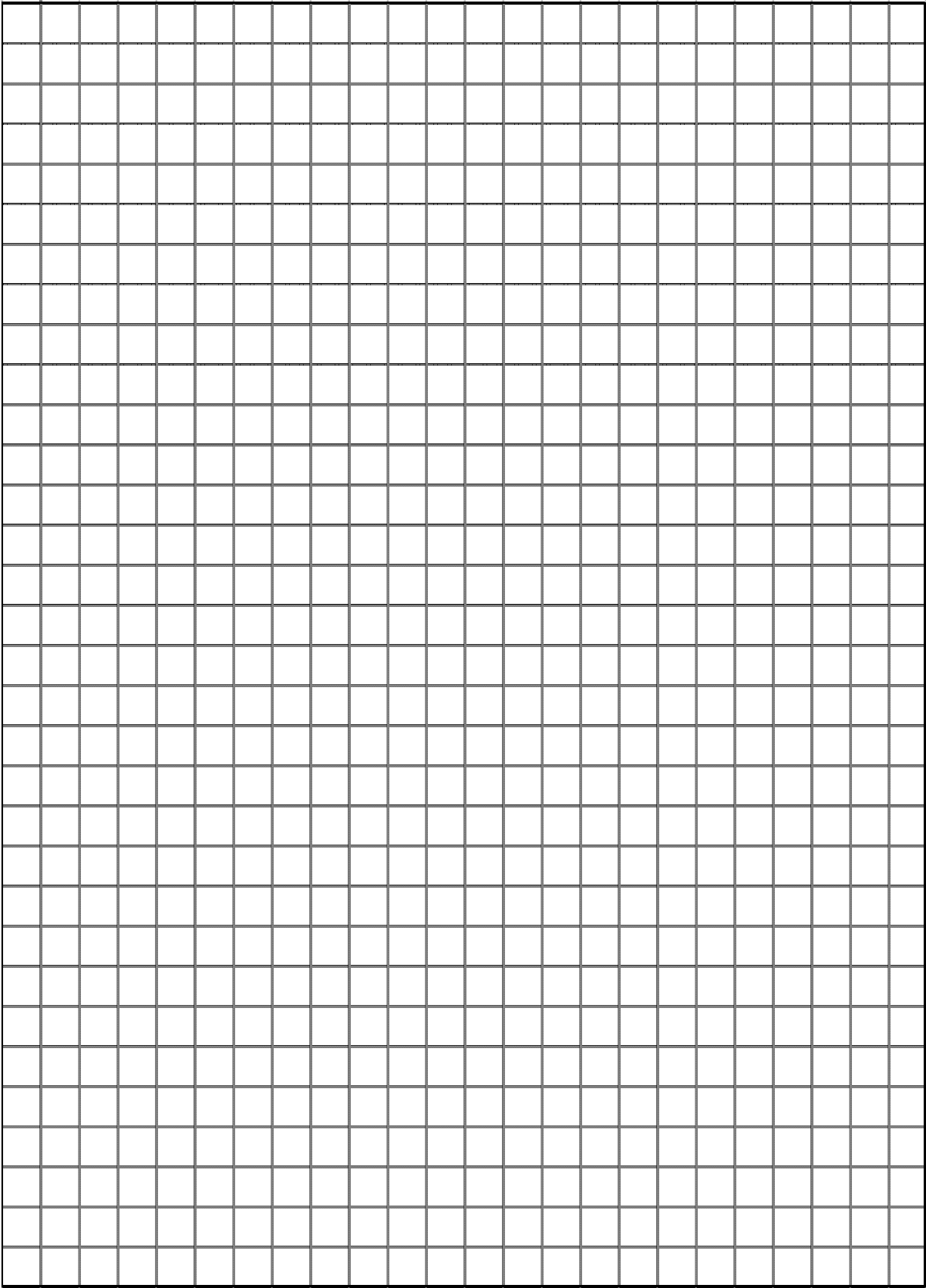
Room Layout Diagram 1
Telco Entrance Facility Room
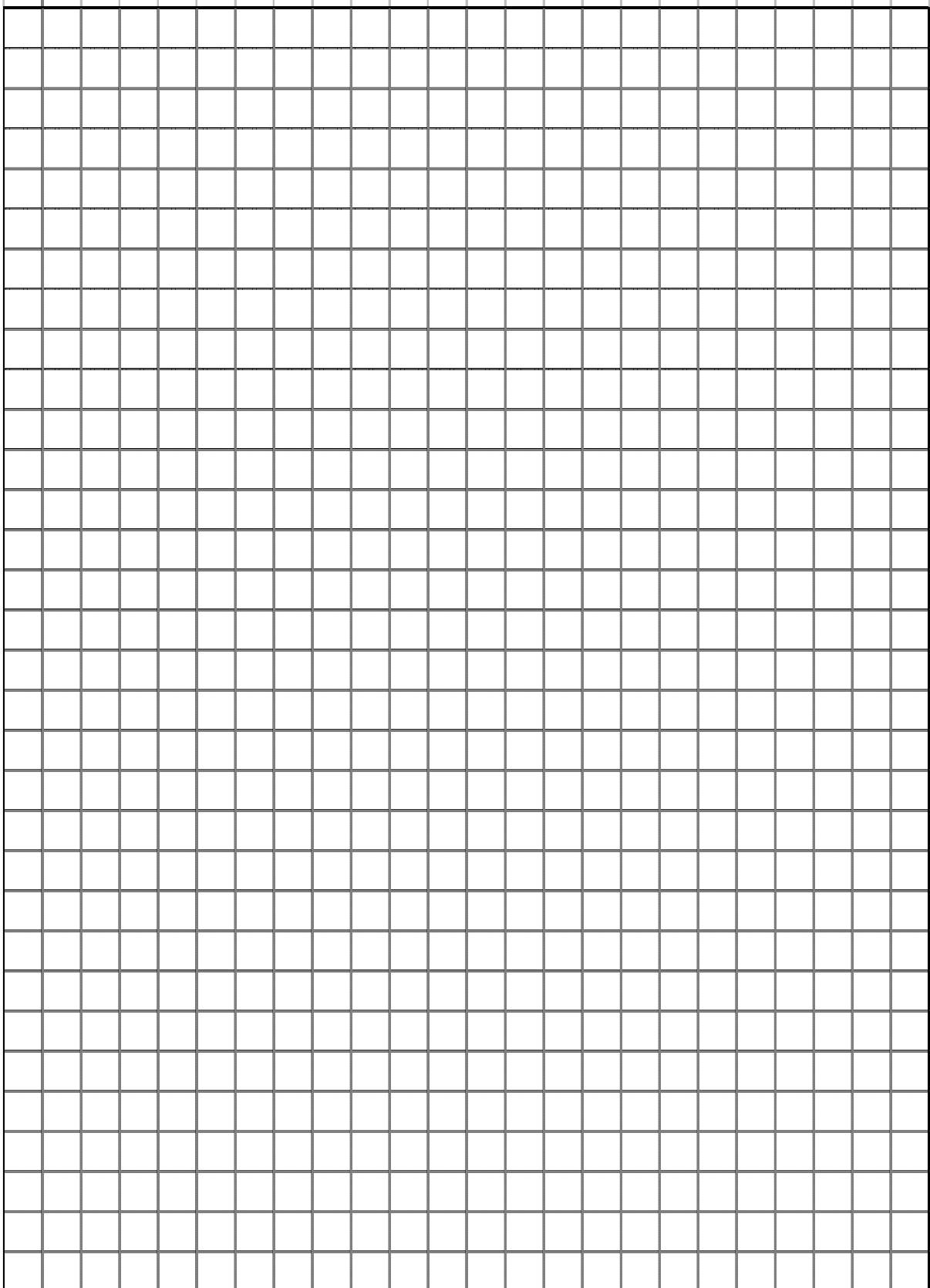
= ___ ft

Room Layout Diagram 2

Main Telephone Room

= ___ ft
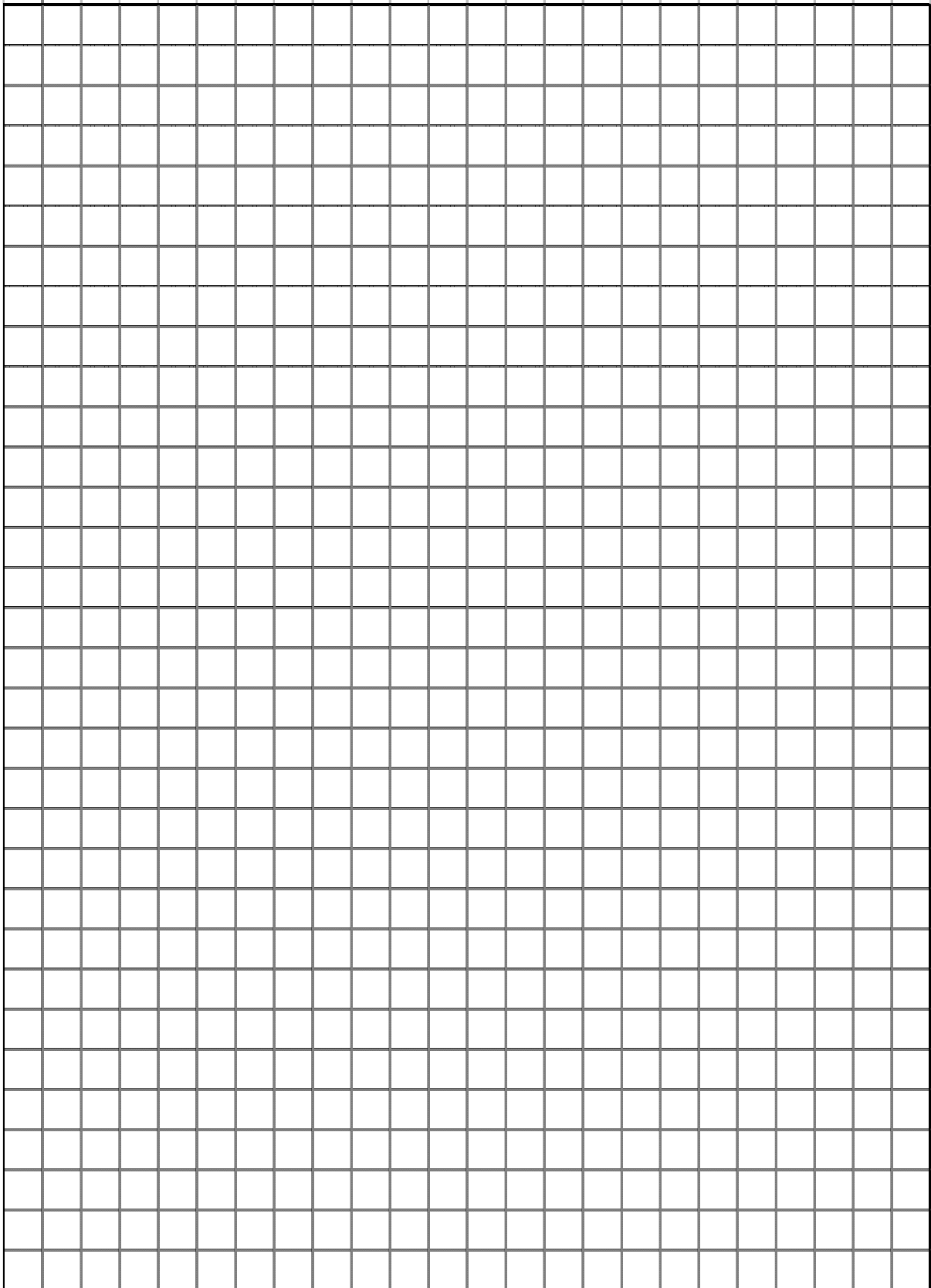
Room Layout Diagram 3
Router Room
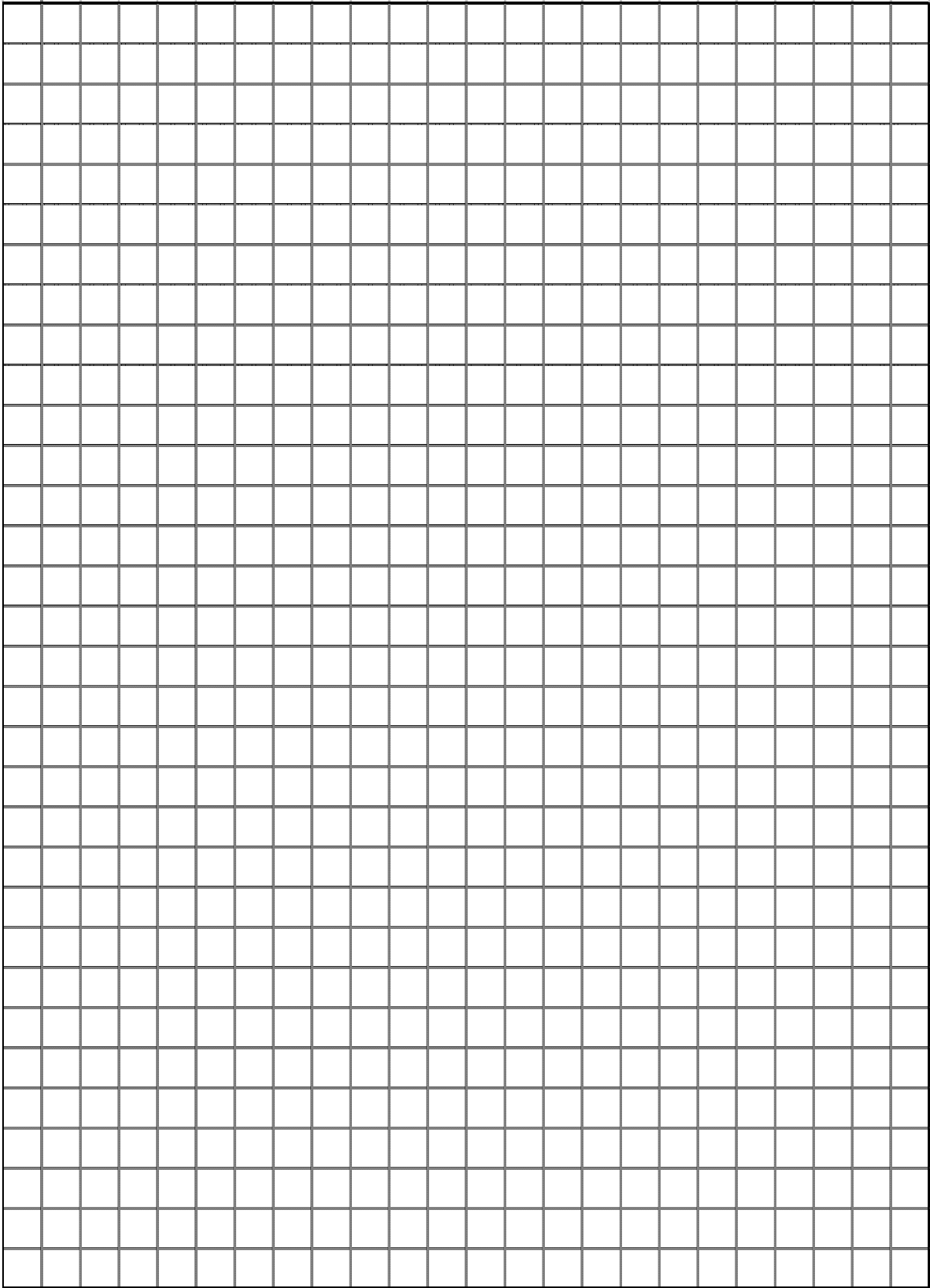
= ___ ft

Room Layout Diagram 4
Video Room

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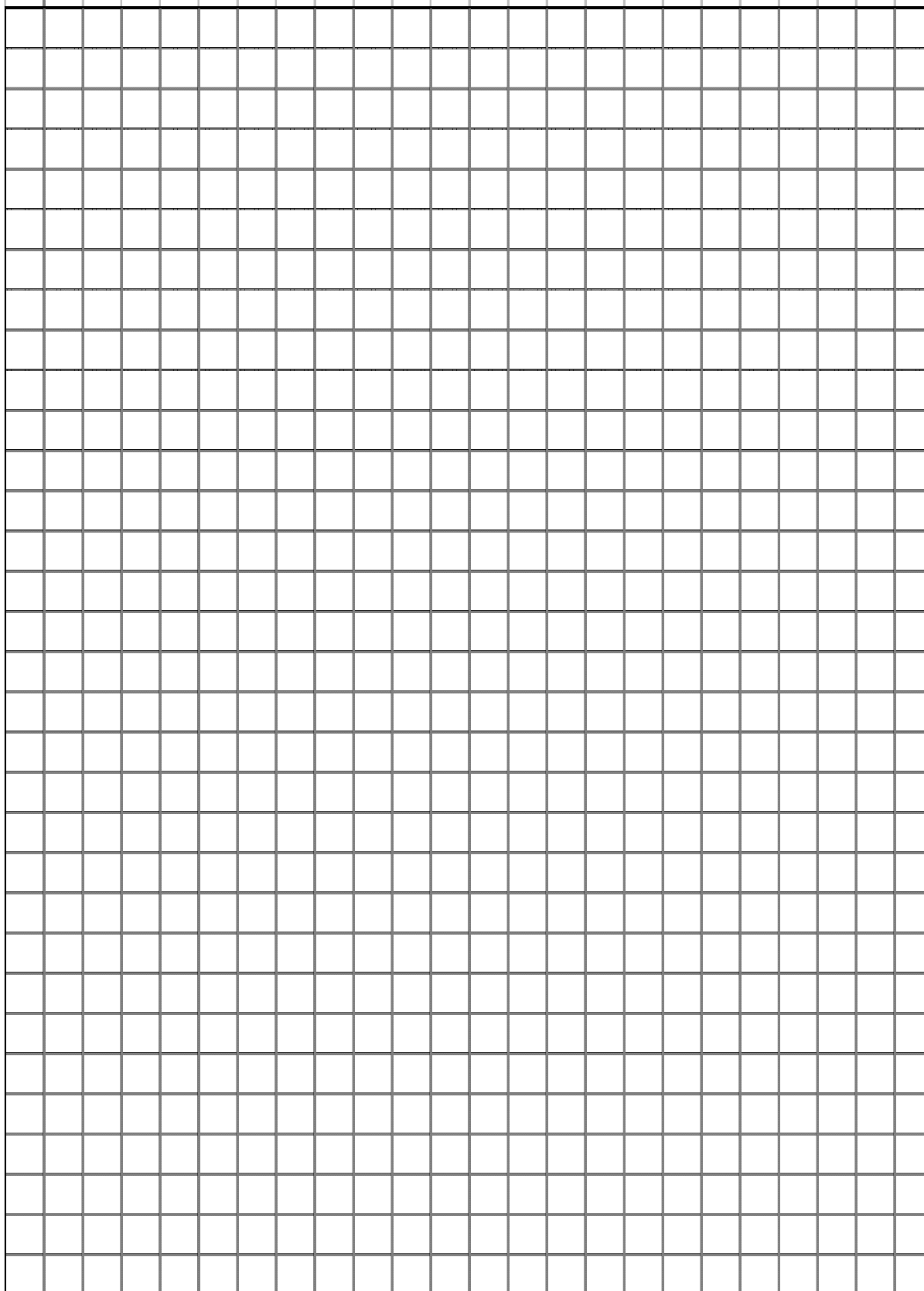
Equipment Cabinet Diagram 1
Telco EntranceFacility Room

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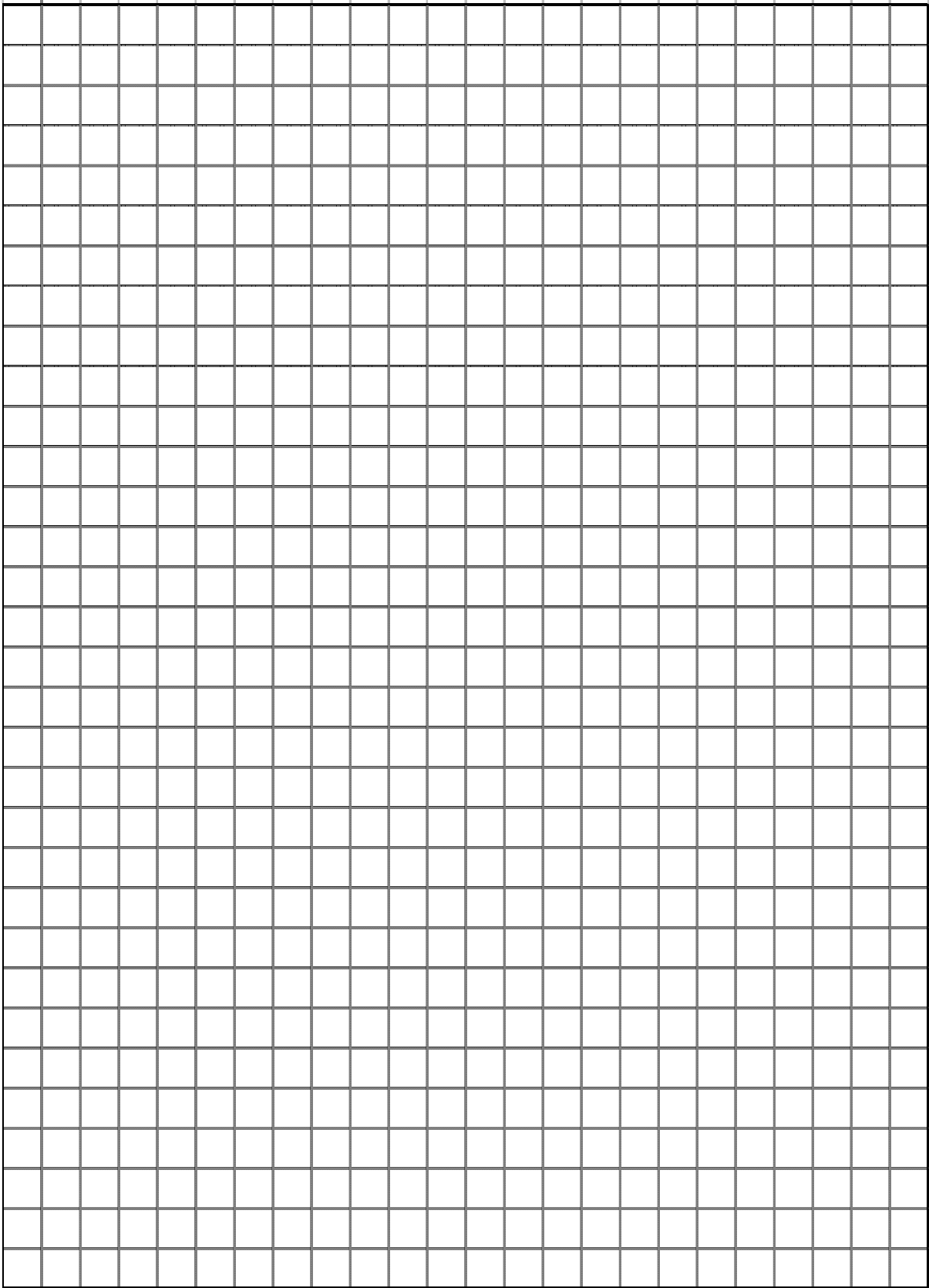
Equipment Cabinet Diagram 2
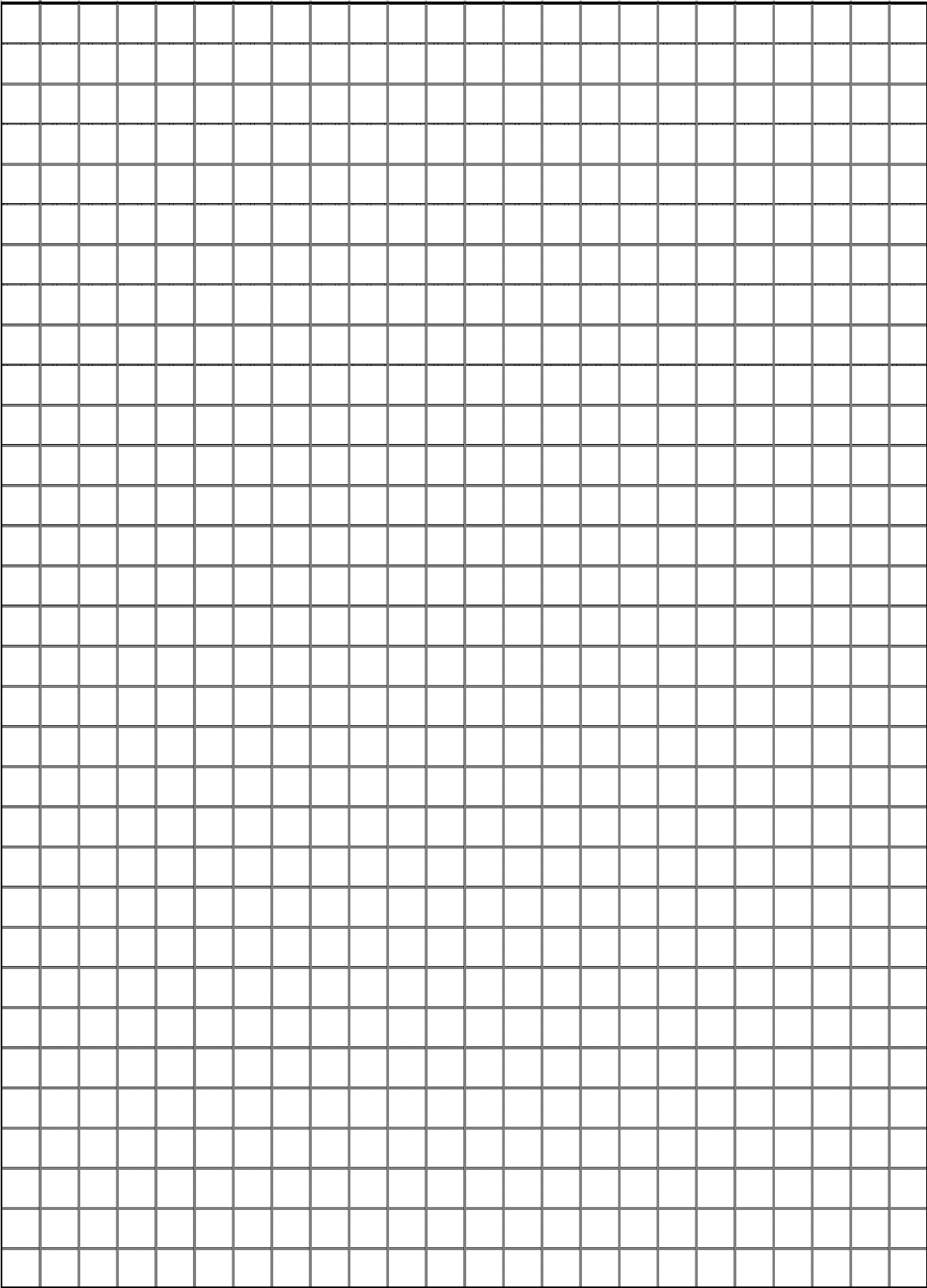## Main Telephone Room

= ___ ft

Equipment Cabinet Diagram 3
Router Room

= ___ ft

Equipment Cabinet Diagram 4
Video Room

☐ = ___ ft